Genetic Epidemiology of Breast and Ovarian Cancer

Northern California Cancer Center
and
Stanford University School of Medicine

Prevalence (%) of BRCA1 Mutation Carriers among Population-based nonHispanic White Breast and Ovarian Cancer Patients

	Breast Cancer Patients	Ovarian Cancer Patients
All patients	2.4	9.6
Ashkenazi	5.4	20.6
NonAshkenazi	2.2	8.4
Age (yr)		
<35	7.6	8.3
35-59	6.6	18.9
50-65	0.4	4.4
Family history		
Positive	3.2	19.2
Negative	2.1	7.0

Prevalence of BRCA1 Mutation Carriers in US NonHispanic White Population

(Whittemore et al., CEBP 2004)

	Population Size[a]	No. Carriers[b]	Prevalence[c]
Ashkenazim	3,702,400	44,307	1/84
NonAshkenazim	207,758,226	506,206	1/410
Total	211,460,626	550,513	1/384

a) Estimated from 2000 US Census

b) Estimated using prevalence in cases and penetrance estimates of Antoniou et al. (2003)

c) Assuming 90% test sensitivity.

Risk in relatives of patients with breast and ovarian cancer

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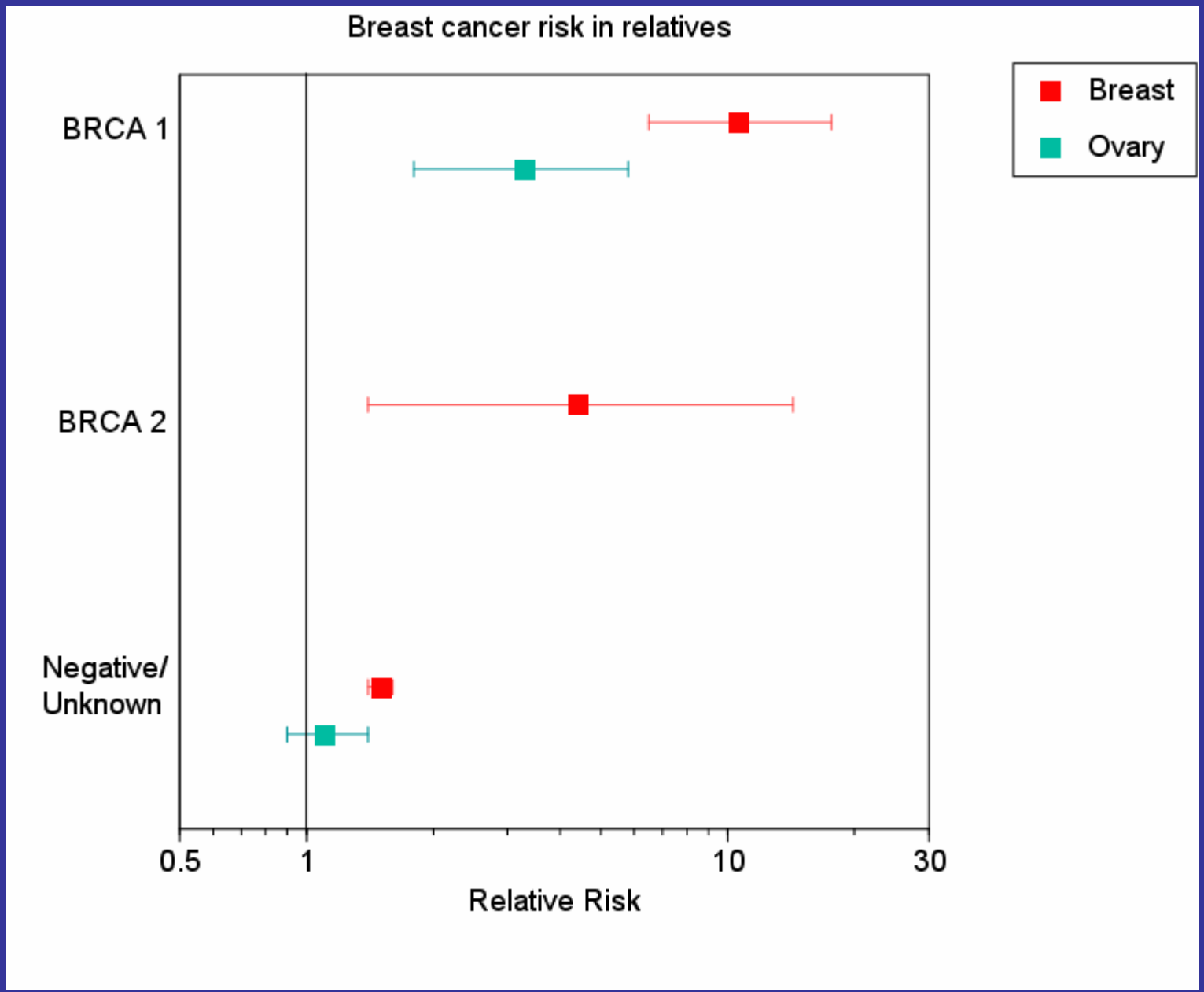
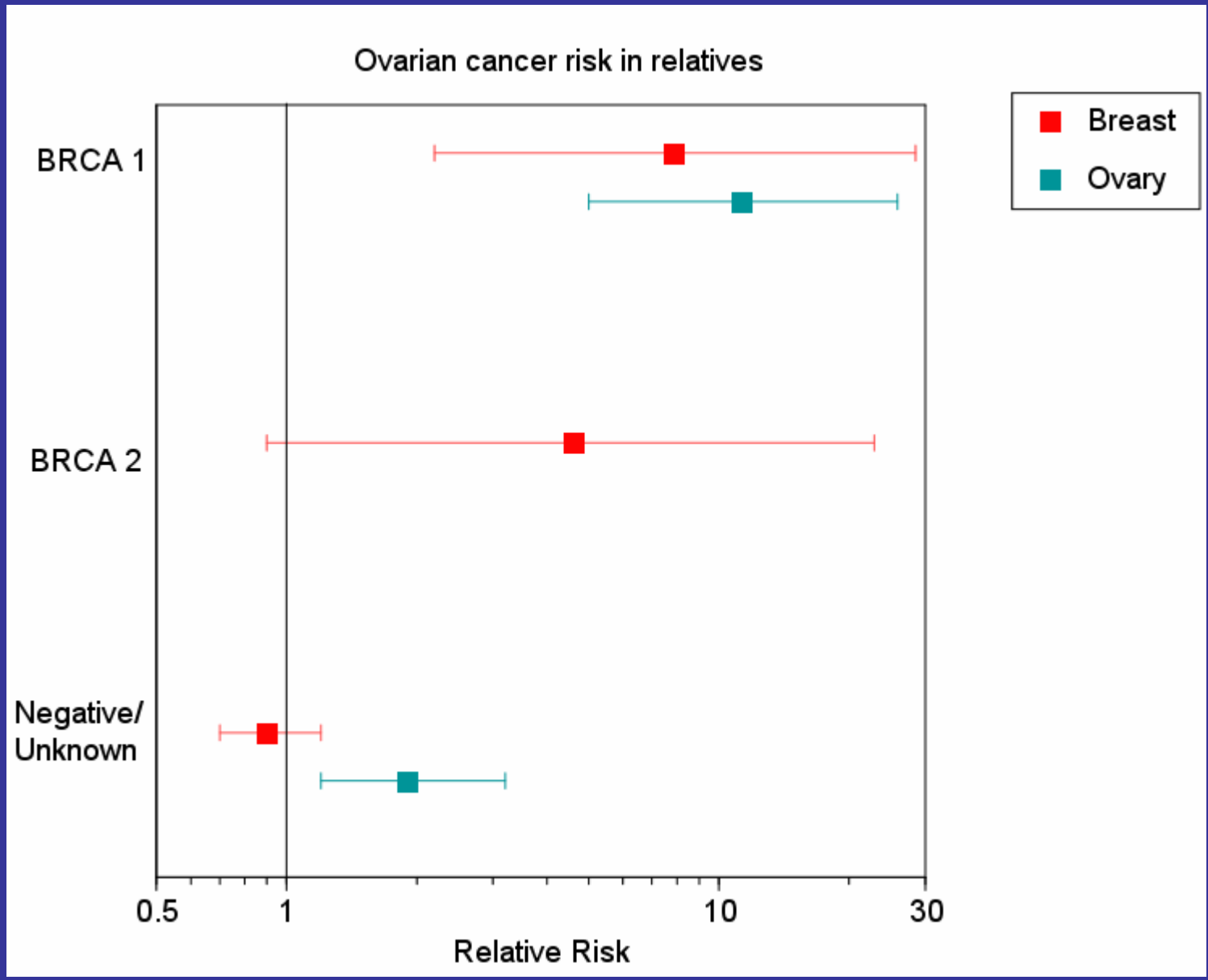

Breast cancer risk in relatives
BRCA 1
BRCA 2
Negative/
Unknown
Breast
Ovary
0.5
1
10
30
Relative Risk


Ovarian cancer risk in relatives
Breast
Ovary
BRCA 1
BRCA 2
Negative/
Unknown
0.5
1
10
30
Relative Risk

Conclusions

- **Additional unidentified genes modify breast & ovarian cancer risks in carriers of BRCA mutations**

Conclusions

- **Unidentified genes affect breast & ovarian cancer risks in noncarriers of BRCA mutations**

- **The evidence is particularly strong in relatives of early-onset breast cancer patients**